

Sub. a.

- [illegible]

signal received by said each transmitter from said third transmitter at said third frequency, said functions being independent of a time delay between said transmitters and said receivers; and

- (f) inferring the position and the orientation of the object from said functions.

2. The method of claim 1, wherein said third frequency is different from said second frequency.

3. The method of claim 1, wherein, for each of said receivers, said first function includes said components of a strongest of said signals received by any of said receivers at said first frequency, said second function includes components of a strongest of said signals received by any of said receivers at said second frequency, and said third function includes components of a strongest of said signals received by any of said receivers at said second frequency.

4. The method of claim 1, wherein said second frequency and said third frequency are even multiples of said first frequency.

5. The method of claim 4, wherein said second frequency and said third frequency are equal.

6. The method of claim 4, wherein, for each of said receivers, all three of said functions include said components of a strongest of said signals received by any of said receivers at said first frequency.

22 21

7. A method for determining the position and orientation of an object with respect to a reference frame, comprising the steps of:

- (a) providing the object with three independent transmitters of electromagnetic radiation;
- (b) providing three independent receivers of said electromagnetic radiation, each of said receivers having a fixed position in the reference frame, at least one of said receivers being spatially extended;
- (c) transmitting said electromagnetic radiation, using said transmitters, a first of said transmitters transmitting said electromagnetic radiation including at least a first frequency, a second of said transmitters transmitting said electromagnetic radiation including at least a second frequency different from said first frequency, and a third of said transmitters transmitting said electromagnetic radiation including at least a third frequency different from said first frequency;
- (d) receiving signals corresponding to said electromagnetic radiation, at all three of said receivers, at a plurality of times; and
- (e) inferring the position and the orientation of the object noniteratively from said signals.

8. The method of claim 7, wherein said third frequency is different from said second frequency.

~~22~~ 22

9. The method of claim 7, wherein each of said signals including components of at least one of said three frequencies, the method further comprising the step of:

- (f) for each of said receivers, forming a first function of said components including said components of said signal received by said each receiver from said first transmitter at said first frequency, a function of said components including said components of said signal received by said each receiver from said second transmitter at said second frequency, and a function of said components including said components of said signal received by said each transmitter from said third transmitter at said third frequency, said functions being independent of a time delay between said transmitters and said receivers;

said position and orientation of the object being inferred from said functions.

10. The method of claim 7, further comprising the step of:

- (f) calibrating said inferring of the position and orientation of the object.

11. The method of claim 10, wherein said calibrating includes predicting said signals at a number of calibration positions and a number of calibration orientations.

12. The method of claim 11, wherein said number of calibration positions is at least 36 and said number of calibration orientations are at least 36.

13. The method of claim 10, wherein said calibrating includes measuring said signals at a number of calibration positions and a number of calibration orientations.

14. The method of claim 13, wherein said number of calibration positions is at least 36 and said number of calibration orientations are at least 36.

Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	

~~25~~ 24